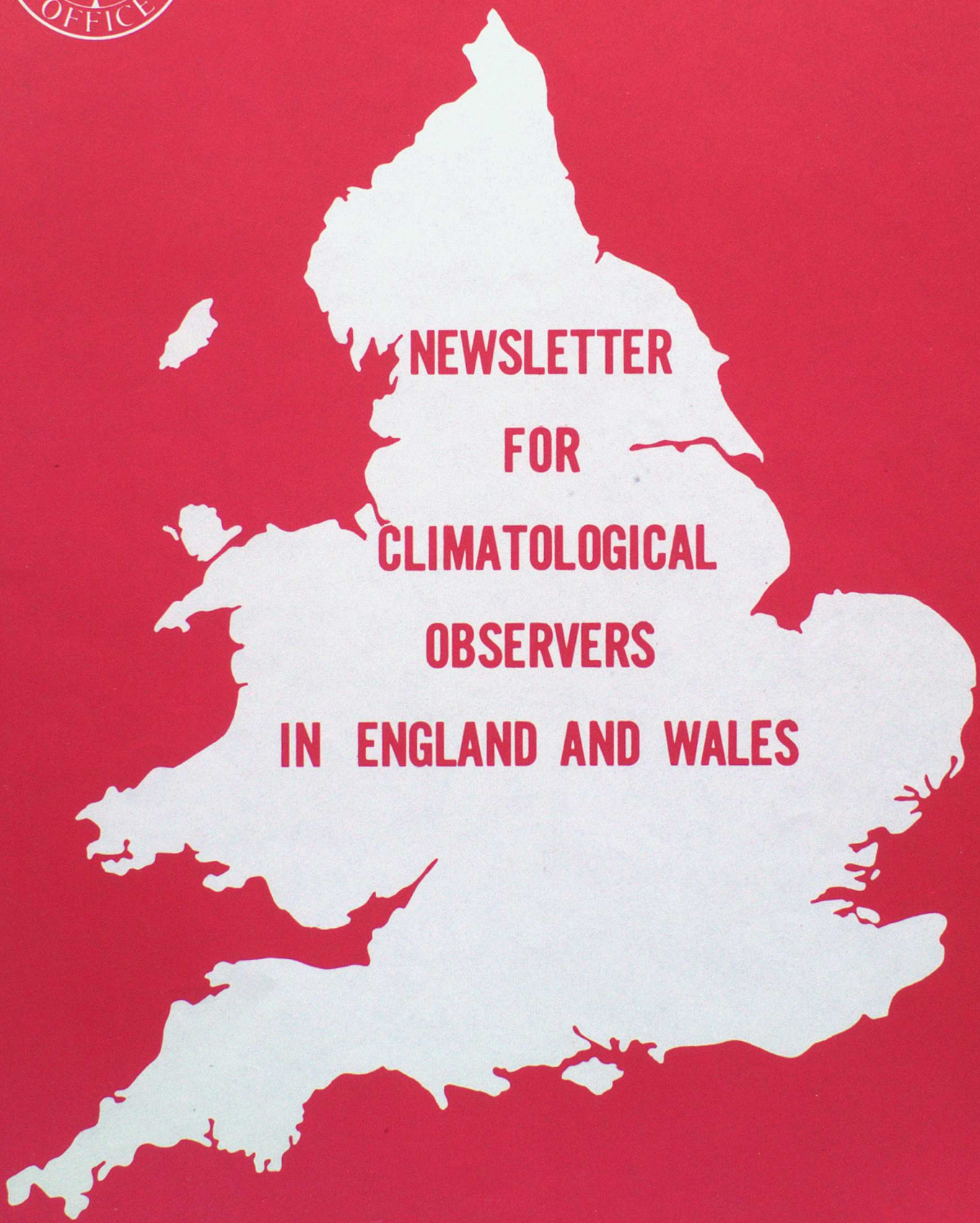
METEOROLOGICAL OFFICE



NEWSLETTER FOR CLIMATOLOGICAL OBSERVERS IN ENGLAND AND WALES

METEOROLOGICAL OFFICE

NEWSLETTER

FOR

CLIMATOLOGICAL OBSERVERS

IN

ENGLAND AND WALES

NO 13

OCTOBER 1984

Produced by:

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OBSERVERS NEWSLETTER OCTOBER 1984

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Editorial

As in previous years advance notice is now given of the Observer training courses which will be held next year on the following dates:

15-19 April 1985
22-26 April 1985
10-14 June 1985

Letters to all stations giving details of these courses together with an application form will be sent out later this year. One further course in 1985 will be notified when the dates have been confirmed.

The above courses are held at the Meteorological College, Shinfield Park, Reading. The College is fully residential with free accommodation and food provided. Travelling expenses are also reimbursed.

The aim of these courses is to give instructions to observers on the various aspects involved in being a voluntary climatological observer and to help give a better understanding on the weather in general. These courses although ideal for new observers are equally beneficial to the more experienced ones. There are no examinations to worry about and each course provides an excellent opportunity to meet and talk to other members of the climatological network who will be coming from all over England, Wales and Northern Ireland.

Turning to a different subject now, we would like your assistance to help keep our station records up to date. If your station has a change of address, telephone number, observer or anything else you consider would be of interest to us please let us know either by dropping us a short note addressed to Met O 1e or by ringing either Dick Brooks, extension 2266 or Dizzy Allen (Elwin Edwards as from December 1984) extension 2727.

W M Longworth

BOOK AWARDS IN 1983

OBSERVER	STATION	PERIOD OF SERVICE
S T WHITAKER	SHEFFIELD (DORE)	22 years

In the October 1983 edition of The Newsletter a list of observers who received a book award was printed. Unfortunately Mr Whitaker's name was omitted from that list so our apologies to Mr Whitaker for his belated mention in the Newsletter.

NEWS OF STATIONS

It is with regret we have to report the closure of the climatological station at Pickering (North Yorks) following the death of the observer Mr John Randall. Mr Randall served in the Meteorological Branch of the RAF during National Service and on demobilization took up an appointment at RAF Leeming. He worked at various stations in the Meteorological Office and also served on the Ocean Weather Ships. Mr Randall had just completed 30 years co-operation and would have been presented with a barograph this year. Due to his untimely death this was not possible but his widow agreed to accept the barograph in recognition of her husband's long period of co-operation.

Following the retirement of Mr Maldwyn Evans, who was the observer at Bwlchgwyn (Clwyd) since this station began its co-operation in 1950, this high level station (386 metres) has now closed.

The Water Authority station at Newthorpe (Notts) has recently been forced to close due to staffing problems which had made it impossible to continue with the required climatological programme.

We are also sorry to lose the co-operation of the Agro-met station at St Albans (Herts) following the retirement of the observer Mr Wallis. St Albans readings have been published in the Monthly Weather Report since 1923 and Mr Wallis has been involved in the running of the station for 28 years.

Two further Water Authority stations to close are Audley End (Essex) and Tavistock, Kilworthy College (Devon).

It gives us great pleasure to welcome a new station, Martlesham Heath (Suffolk) into our co-operating network, especially so in view of the several closure we have had to report. We look forward to many years of mutual co-operation.

THE SECOND EXTRACT FROM MR G W BRYANT'S ARTICLE ARCHIVING AND QUALITY CONTROL OF CLIMATOLOGICAL DATA REPRODUCED FROM THE METEOROLOGICAL MAGAZINE, 108, 1979, pp 309-315.

3. Data archiving and quality control

At the end of each month, the observations are transferred to the appropriate forms which are then sent to the Meteorological Office. The forms arrive at a fairly steady rate for the first three weeks of the following month, by the end of which time about 80 per cent of them have been received. Thereafter, the forms arrive at a slower rate and it is usually another three weeks before the last of them are available. Because of these late arrivals, there is always some overlap from month to month but the aim is to complete the processing of each month's data before work begins on the next. For this reason, the archiving and quality control system has been formed into a standard sequence which, although it is a continuous process, may be regarded as consisting of four distinct stages which will now be described in detail.

(a) Data entry

The process begins during the second week of each month when the forms are examined by scrutineers to ensure that the items known as indicatives (month, year and station number) have been correctly entered. This is vital because, throughout the rest of the process, these items are the only means by which the computer can identify the data and assign them to the correct data-sets. When the indicatives have been checked and, if necessary, corrected, the forms are passed to the keying section.

The keying section at the Meteorological Office is equipped with a Seecheck data entry system. This consists of a minicomputer controlling 19 keying stations each with a keyboard, similar to that used in a typewriter, and a screen which displays the line of data being keyed. Each keying station, acting independently of the others, is used to key data directly to magnetic disc storage.

The data are keyed at a rate of 12000 key depressions per hour and even with the simplification that the data are mostly numerical, keying errors are inevitable. These only occur at a rate of about 2 errors per 1000 key depressions but since a single error can corrupt a complete observation, they can present serious problems. Quality control at this stage has, therefore, become very important. Some elementary checks are carried out during keying. For example, the hour or day is keyed at the beginning of each line and a count reveals any missing or duplicated observations. The main check, however, consists of complete re-keying of the data in verification mode of a different operator. If there is a discrepancy between the results of the first and second keyings, the keyboard being used for verification will lock until the query is resolved.

The minicomputer is capable of limited quality control operations and possible applications are being investigated. However, at present, verification keying offers the most reliable method of ensuring that the data are accurately transcribed from the manuscript to the computer data-sets.

After verification, the data are sorted from the keyed order to files based on the type of data (hourly or daily, for example). Once this has been completed, the data are transferred to the main computer for archiving and quality control.

(b) Data archiving

At this stage, the files contain only the data which happen to have been keyed during that particular day and these data are now added to more permanent (archive) data-sets. With the exception of hourly data (which includes fixed hourly data), archive data-sets are prepared at yearly intervals for each type of data (daily, anemograph, soil and earth temperatures, and observations made at 09 GMT). Each of these sets has space for data for all stations for an entire year and they are retained on line until complete. Because of their much greater volume, hourly data are stored in monthly data sets.

The archive data-sets have been carefully designed to achieve compact storage and easy access and to facilitate the subsequent copying of data to single-station archive sets. A series of accessing sub-routines has been written in the Meteorological Office specifically for use with this type of data-set but the design also offers considerable advantages with standard access methods.

The data are stored as half-word binary integers which, for the IBM system, have a range of -32768 to +32767, sufficient for all surface climatological values. Each data-set has the same basic design of a main header block followed by a series of data blocks each beginning with a short, descriptive, header record. For yearly data-sets, each block contains data for one station-month and the blocks are stored by month so that all the data for a given month follow those of the previous month. Within the monthly groups, the data for each station always occupy the same relative position. The main header block contains an index which gives the first block number for each month and the relative block number of each station within each monthly group. The data for each station-month are thus easily located.

The format of the hourly data is very similar except that each block contains data for one to eight days, depending on the number of observations made each day. In this case, all the data for each station are stored together.

Each completed set is transferred to magnetic tape soon after the new one is created, with some overlap to allow for the late arrival of data.

(To be continued)

STAFF CHANGES IN MET O 1

Over the next few months several people who work in Met O 1 will be retiring. Although not all the names will be familiar there are one or two who I am sure you will recall and indeed may have met at some time, perhaps during a station inspection.

Dizzy Allen who has been in her present post for the past eleven years which involves arranging station inspections and helping in the administration of the climatological network will be retiring in early December. Her successor will be Elwin Edwards.

George Swift retired in September. George spent eight years helping Dizzy in the running of the climatological network before taking up a new post, on promotion, dealing with automatic weather stations.

We wish them both a long and happy retirement.

THE PERILS OF AN INSPECTOR

As you will be aware the climatological network is regularly inspected by members of staff from the Meteorological Office. Inspectors visit stations all over England and Wales and as you might expect they find the instrument enclosures situated in a wide range of different settings. This of course helps to make inspections all the more interesting and sometimes eventful as was illustrated by the remarks made by one inspector which were extracted from his notebook:

> The sunshine exposure diagram was not completed. Inspection curtailed by showers and finally stopped by bull of uncertain temperament being admitted to field containing enclosure.

(Ed: one would assume that vandalism is not too much of a problem at this station.)

OBSERVING PROCEDURES

Now that winter is once again just around the corner some of our new observers might find it helpful if some of the procedures which have to be followed during the winter months were explained.

TEMPERATURES BELOW FREEZING

When the wet bulb temperature is below freezing it is necessary for the wet bulb to have a thin coating of ice instead of a coating of water. This can be accomplished by using the following procedures which should be started about 30 minutes before the time of observation.

If the water on the threads is frozen use a small camels' hair brush to moisten the muslin all over with ice cold water. If the water on the muslin does not readily freeze it can be induced to by touching it with a little hoar frost, ice fragments or snow. By the time the normal observation hour arrives the wet bulb should be correctly functioning as an ice bulb. On some occasions when the dry bulb shows a reading below freezing, the water in the container, on the threads and on the muslin on the wet bulb (owing to supercooling) will be found to be still liquid. When this occurs freezing is induced by touching the muslin with a little hour frost, snow or ice fragments.

EXCEPTIONAL WET-BULB THERMOMETER READINGS

The correct functioning of the wet bulb or ice bulb is normally indicated by the reading being lower than the dry bulb. However, when the temperature is below freezing and no water fog is present it is possible for the ice bulb to read about 0.3 degrees C higher than the dry bulb. Such occasions are of great interest and after the observer has checked to ensure the ice bulb is correctly functioning a suitable note should be made in the register.

GRASS MINIMUM THERMOMETERS

When snow covers the ground the grass minimum thermometer should be placed on its supports immediately above the snow surface with its bulb close to but not touching the snow surface. If the thermometer is covered by snowfall overnight it should be carefully extracted and read as usual but a note made in the register that the thermometer was buried in snow.

CONCRETE MINIMUM THERMOMETERS

The concrete slab on which the minimum rests should be swept clear of any snow before setting. On occasions when snow has fallen over night the thermometer should be carefully removed and read and a suitable note made in the register.

BARE-SOIL MINIMUM THERMOMETERS

Under normal conditions this thermometer rests on level bare soil with the bulb end slightly lower than the upper part of the thermometer. If snow covers the ground the thermometer should be placed on top of level snow as close to the normal site as possible. When snow has fallen overnight the same procedure as for the grass minimum should be followed.

SOIL TEMPERATURES

For those stations which record soil temperatures the following procedures should be followed when snow covers the ground. Any appreciable fall of snow covering the soil tube caps or the right angled thermometers should be removed and returned after the reading has been taken.

MEASUREMENT OF SOLID PRECIPITATION

When there has been a comparatively slight fall of solid precipitation one of the following methods should be used to obtain the liquid equivalent.

1. Apply a cloth dipped in hot water to the outside of the funnel.

2. Add a known measure of warm water to melt the snow or ice, remembering to subtract this added quantity from the resulting reading.

3. Take the raingauge funnel and receiver indoors and melt. To avoid loss of catch from evaporation the funnel should be covered by a flat plate. This method can only be used when no precipitation is occuring.

In periods of heavy snowfalls or strong winds a different method is required to obtain the liquid equivalent. The following method can be used when there has been no previous snowfall:

An inverted raingauge funnel should be pressed down into a level area of undrifted snow until it reaches the ground, this sample should then be taken indoors and melted. If possible 3 readings should be taken several metres apart and the average reported. To take further measurements by this method after snow has fallen it will be necessary to use a white wooden board. The board should be placed on level snow with its upper surface flush with the surrounding snow surface and be swept clear after each reading.

AWARDS TO OBSERVERS, 1984

The following observers have received an Award this year of a Barograph in appreciation of their long period of co-operation:

OBSERVER	STATION	PERIOD OF SERVICE
C G Smith	Oxford	32 years
K Pack	Caldecott (Northants)	30 years
J Randall	Pickering (North Yorks)	30 years

Book awards have been made to those observers listed below:

OBSERVER	STATION	PERIOD OF SERVICE
G Barlow	Southport (Merseyside)	15 years
A Hunter	Silsoe (Beds)	15 years
J P Millet	Rosewarne (Cornwall)	16 years
R D Morris	Botwmnog (Gwynedd)	15 years
E Oakley	Hartburn Grange (Cleveland)	15 years
R D Quinn	Fowey (Cornwall)	15 years
T H Riley	Sheffield, Weston Park (South Yorks)	15 years
D G Risley	Rogate (Hants)	15 years
Mrs A Warner	Durham	15 years

Three presentations of the book award were made to observers in Northern Ireland and four to observers in Scotland. In addition, one observer in Scotland was presented with a barograph.

WEATHER IN THE UNITED KINGDOM JANUARY-JUNE 1984

Until 8 February the United Kingdom was affected by a period of vigorous westerly weather. All areas had periods of rain and high winds at times. But for two weeks from 13 January deep Atlantic depressions passed over rather than to the north of Britain. With very cold air from the north-west in their circulation there were blizzards in the north, that on the 21st and 22nd being exceptionally severe. Central parts also had some snow at times, but in the south there was very little. Considerable depths of snow accumulated in the north, particularly over the higher ground, for example, 54 cm at Kielder Castle, Northumberland, by the 24th and 60 cm at Holme Moss, West Yorkshire, by the 25th. In Scotland, even greater depths were recorded with 112 cm at Leadhills in the Southern Uplands on the 27th. The occasional lull resulted in severe frost in parts of the north; on the 25th the temperature fell to -11.1 °C at Widdybank Fell, Durham, although this was relatively mild when compared with the minimum of -23.6 °C at Grantown-on-Spey, Highland Region, on the 20th. Subsequently, there was a gradual thaw although there were some wintry showers at times in the north, as there had been earlier in January. Gales, severe at times, were frequent in exposed areas. On some occasions winds reached storm force and, in places in the north, even hurricane force. High gusts included 89 kn at Lynemouth, Northumberland, on the 16th and 85 kn at Gwennap Head, Cornwall, on the 23rd. At some high level stations even higher values were recorded with 104 kn on Great Dun Fell, Cumbria, and 118 kn on Lowther Hill, Strathclyde Region, on the 13th, and 104 kn on Snaefell, Isle of Man, on the 16th. Tornadoes damaged property near Doncaster on the 14th and at Teignmouth, Devon, on the 26th. Despite being the wettest January over England and Wales since 1948 it was the sunniest since 1959 with central and eastern districts being particularly sunny.

The remainder of the half year was, in sharp contrast, often anticyclonic or easterly with only brief periods of westerly weather. As a result there was a good deal of dry or mainly dry weather with most western and some northern areas being even drier than in the same period (February to June) in 1976. However, rainfall was about normal over East Anglia and above average in parts of eastern Scotland. April was the driest over England and Wales since 1957 with less than 10 per cent of the average rainfall in much of the south. Totals of below 10 per cent of average were also recorded in parts of Cornwall in June. The only really unsettled spells were during late March and from mid-May to early June. It was particularly wet on 23 March, with 65.0 mm of rain at Princetown, Devon, and on 21 or 22 May, with 47.5 mm at Penzance, Cornwall, on the 22nd, while rainfall was prolonged over south-eastern areas from 25 to 27 May. Thunderstorms also caused some heavy falls locally in June with 48.0 mm at Luton on the 17th and 52.0 mm at Morley St Botolph, Norfolk, on the 20th. After a mild start to February temperatures were mostly below normal until early June with May being particularly cold. Night frost occurred at times, mainly before mid-May; low minima included -9.4 °C at Santon Downham, Norfolk, on 4 April and -5.1 °C at Alwen, Clwyd on 13 May. Fog, persistent in places with temperatures remaining below freezing point, was widespread in mid-February, especially in central parts. The last two weeks of April, however, were brilliantly sunny with exceptionally high maximum temperatures, especially in the west, for example, 26.2 °C at St Helier, Jersey, on the 22nd and 24.2 °C at Haydon Bridge, Northumberland on the 25th and at Towey Castle, Dyfed, next day. The highest April values this century in Scotland and Northern Ireland were also recorded with 26.5 °C at Onich, Highland Region, on the 25th and 24.5 °C at Boom Hall, Co. Londonderry, on the 26th. There were also some very warm days in June and maxima exceeded 27 °C in places on the 19th and 20th. In contrast to March, which was the dullest since 1942, April was the sunniest over England and Wales since at least 1914.